are proved to be facts, by some specimens of these shells combining in one individual what have been regarded as two or more species. If, in such cases, all the *Crepidulæ* and *Calyptrææ* from one geographic district were arranged together, we should see that the species of each of those districts exhibit similar varieties, and that the species which have been made on the form of the shell are in fact varieties, from similar causes, of different species.

Unfortunately the animals of these genera show themselves so little beyond the shell when the animal is alive, and afford so few characters as they come to us preserved in fluid, that we can expect but little assistance from them in the determination of the species. They have no operculum to help us; yet we may hope that the examination of the tongues of the different kinds may help in determining the distinctness of the geographic species; but as yet no attempt has been made, except by Dr. Lovén and Mr. Thomson, to use the teeth for this purpose. It would be an admirable subject for a young malacologist who can use the camera lucida on the microscope to take up, as by so doing he would be rendering most important assistance to the study of Mollusca.

XL.—*Description of* Carterodon sulcidens, *Lund.* By John Reinhardt*. Translated from the Danish by Dr. Wallich, F.R.S., Vice-Pres. L.S.

Lagoa Santa, 19th July 1851.

Among the heaps of small bones, so frequently met with in the limestone caves of this part of the Brazils, and which owe their existence to *Strix perlata*, Licht., are often found skulls, more or less broken, of a small animal, belonging to the family of Pig-rats, but distinct from the cognate forms, in having on each side of the upper incisors, along the middle, a projecting ridge, with a lateral, rather deep furrow. Dr. Lund founded on these crania his *Echinomys sulcidens*, in his first treatise on the extinct animal creation in Brazil†, which he subsequently thought could be referred to the genus *Nelomys*‡, on account of certain peculiarities in the dental system, and at last to *Aula-*

* From a letter to Prof. L. Steenstrup; communicated to the Association of Natural History at Copenhagen, at the meeting on the 14th Nov. 1851.

† Blik paa Brasiliens Dyreverden, &c. (View of the Animal World of Brazil before the last Revolution of the Globe.) First memoir. Introduction, p. 23.

‡ *Loc. cit.* Third mem. p. 30.

codus, under the name of *A. Temminckii**, but which Mr. Waterhouse has recently proposed as the type of a distinct genus, *Carterodon*†. But as Lund never succeeded in obtaining the animal itself, and as Waterhouse had no other materials at his disposal than the crania fractured by the Cave-owl, all that was known of this new genus consisted of an outline of the head and the nature of the teeth. I am in a position to supply some of the desiderata, having lately been fortunate enough to procure a nearly full-grown female and a half-grown young, from which I now take the following short description of this remarkable animal.

Carterodon sulcidens has somewhat the appearance of a large *Hypudæus*, it being a clumsily-built animal, with a large head, a short, blunt snout, small eyes, rounded low ears, which however extend beyond the fur-covering; and short limbs and tail.

The upper part of the body is clothed with long bristles; among these are mixed spines, which entirely resemble in structure those of most of the other members of the family, but are scarcely broader than half a millimetre, and end in a hair-like point, long and flexible, and so far from pricking, that it is scarcely perceptible to the touch. They become narrower and fewer down the sides of the animal, until they quite disappear on the under side, where the covering consists of stiff bristles only.

The dental system having been figured and exhausted by Lund and Waterhouse, I pass it over here.

The ears are almost as broad as they are long, and covered, both internally and externally, with short soft hairs, more dense towards the margins, but not enough to conceal the skin entirely.

The naked spot which surrounds the nostrils is of small spread; and between it, and the margin of the upper lip, is seen a rather broad band, thickly covered with very short whitish hair.

The extremities, especially the hinder, are very short; the anterior are proportionally broader. The toes, being (as usual in the family) five on each foot, are, with exception of the innermost, connected by means of a rather developed skin. Their relative length resembles that usual among Echinomyds. The rudimentary thumb of the fore-foot is furnished with a flat nail; the other toes have gently curved, rather long claws, which in the fore-legs are inconsiderably shorter than in the hind ones; at

* Fortsatte Bemærkninger, &c. (Continuation of Remarks on the Defunct Animal Creation of Brazil), p. 16.

† Natural History of Mammalia, vol. ii. pp. 351–353. pl. 16. fig. 7.

their root there is a quantity of stiff hairs which extend over and partly conceal them.

The tail is shorter than one half of the head and body together, scaly, and covered with numerous hairs, which spread in all directions, so as in no manner to conceal the scales. Immediately before the anal aperture, rather in its anterior, somewhat labiate margin, there is, in both sexes, a small pore leading to a minute bag or cavity, secreting an offensive matter. This glandular organ I do not find recorded in the family, although it occurs in all the other Pig-rats of these parts.

The clitoris is not furnished with a furrow, but forms an *entirely closed tube* having an opening at its apex*. I have only found three pair of paps, each surrounded by a little naked area, the hindermost between the thighs, about equidistant from the sexual organs and the navel; the two other pairs are situated rather on the sides of the body than below the belly; one of the pairs before the navel, the other distant about 40 millimetres from it.

The skin is remarkably brittle and loose in texture.

The colour of the upper part of the body is yellow-brown, much shaded with black. All the hairs and spines are here bluish gray at the base, becoming gradually darker towards the apex; or they are marked with a broad, rust-coloured zone below the black apex; but in such proportion that, while by far the majority of the spines want this bright zone, the reverse obtains in regard to the hairs. On the sides of the body, downwards, the ferruginous yellow prevails, while the spines diminish in number, and the black colour tends more and more to the grayish, until it entirely disappears on the belly. Here the hairs are of one uniform colour their whole length; along the sides of the belly there is a band of yellow-red; the middle is pure white, and the portion so marked, which widens both before, towards the chest, and behind, towards the groins, is sharply defined from the above-mentioned enclosing band, and without the slightest transition of colour. The bands unite between the fore-legs, excluding entirely all white colour on the breast; the lower part of the neck and throat is reddish, though this colour becomes fainter anteriorly. On the outside the limbs have the same colour as the sides of the body, becoming fainter towards the feet, where there is a greater admixture of white hairs; the long bristles which extend over the claws are white. The inner part of the extremities is almost naked, especially of the hind-

* This peculiar structure belongs to all the other forms of the family which I have been able to examine, but has not hitherto been noticed, as far as I know.

legs. On the upper side of the tail the hairs are black, below they are whitish yellow.

The half-grown young animal was a male and resembled entirely the old one, with exception of the spines still being considerably narrower and less stiff; and those placed on the lower parts of the body, which in the full-grown individual were yellow-red, had here a grayish colour. I am unable to decide whether this difference was accidental, or connected with the difference of age or sex.

Several points in its organization, particularly the broad fore-legs, the proportionally weak hind-legs, and the long, slightly curved claws, point at the *Carterodon sulcidens* having a considerably developed power of burrowing, and its being destined probably in a great measure to a subterraneous existence. This in fact, as far as has been related to me, is really the case; it inhabits the open *Campos*, overgrown with shrubs and trees, where it digs its residence, consisting of a rather long tube 3 to 4 inches in diameter, and leading in a slanting direction into a chamber, scarcely beyond a foot from the surface of the ground, which the animal lines with grass and leaves. The stomach of the two specimens which I examined was entirely filled with a yellow pasty substance, evidently of vegetable origin; and to conclude from the strong, broad incisors, it seems probable, that the animal subsists wholly on vegetable food, rarely, if ever, consuming insects, as is the case in regard to the Echinomyds* with narrower and sharper incisors.

I subjoin the dimensions of the specimens. The male had only two molars cut through, and can scarcely have been much more than half-grown; the female wanted still the hindmost fourth molar; but as it was pregnant with a fœtus 1½ inch long, it may be considered as about full-grown.

	♂	♀	
Entire length	196	270	millim.
Length of tail	53	82	„
End of snout to anterior corner of the eye	14½	18	„
Length of the opening of the eye	0	7	„
Distance of end of snout from anterior margin of the eye	29	35	„
Length of ear	0	19	„
Width of ear	0	18	„
Length of hind-foot	27	30½	„
Length of claw on the middle toe of the fore-leg	0	4	„
Ditto ditto ditto hind-leg	0	5	„

* What Dr. Lund says (View of the Animal World of Brazil before the last Revolution of the Globe, Third memoir, p. 30) concerning the "habit of the genus *Nelomys*" has reference to the other species.